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COTTON AND CROP REPORTING

Within the past few years a very considerable approach to accuracy has been made by the various crop-reporting agencies of the country. This improvement in methods and in results has been due to several circumstances. The output of our agricultural products has greatly increased, the speculation in these products has become much more active and intense, the position of the United States as a factor in the markets of the world has been largely raised. These observations apply in a measure to all of our crops, but with special force to those usually denominated "speculative." And, of these speculative crops, none has more strongly enlisted popular interest than has cotton. The fact that the southern states have succeeded in establishing what amounts almost to a cotton monopoly, resulting in a rising price and powerful demand for the local stock of the staple, has had the effect of inducing crop statisticians to spare neither time nor money in improving their reports; and has, in a precisely similar degree, given to these reports an influence over prices. This situation has its dangers. It has increased the fear of tampering with the reports, and has added to the possibilities of loss that might possibly arise from faulty methods. More and more the attention of the world has therefore been turned to our government crop-report service as that of an impartial agency which might be relied upon to hold the balance even between contending sides in the speculative market. Yet just at this juncture have come alarming revelations concerning the condition of affairs in this very service. The temptation to make money has apparently proved too strong for some of those engaged in preparing the government reports, and another unfortunate page has been written in the history of governmental interference with industry. Moreover, attention has been called with increased force to certain discrepancies and absurdities in the government reports as now published. These, of course, had been under discussion for a long time prior to recent developments, but the public generally

had been willing to bear with the situation rather than to stir up what might turn out to be a disagreeable controversy. The minds both of government officers and of the technical world are now relatively open, and their attention is powerfully drawn to the problems of crop-reporting which for so long have called for solution without producing any valuable result. It is with regard to cotton that effective interest in the subject has at last been aroused. This staple presents precisely the same questions as any other product to the mind of the investigator, yet because of the conditions of its production and consumption it is peculiarly amenable to correct statistical treatment, and furnishes a good type after which to pattern reports concerning other articles.

I

An understanding of the present divergent figures issued by the government with regard to the general subject of cotton can be had only by a careful study of the methods employed in the collection of the different classes of figures and the character of the returns upon which the final statistics are based.

The figures now regularly issued by the Census Bureau for cotton are collected under the terms of two distinct provisions. The first of these is the law passed by Congress, placing the census upon a permanent basis, approved March 6, 1902, sec. 9 of which reads in part as follows:

"Sec. 9. . . . The director of the census shall annually collect the statistics of the cotton production of the country as returned by the ginner, and bulletins giving results of the same shall be issued weekly, beginning September 1 of each year and continued until February 1 following.

The second provision to which reference has already been made is contained in the joint resolution of Congress, approved February 9, 1905, reading:

That the director of the census be, and he is hereby, authorized and directed to collect and publish, in connection with the ginner's report of cotton production provided for in sec. 9 of an act of Congress entitled, "An Act to provide for a permanent Census Office, approved March 6, 1902," statistics of the consumption of cotton, the surplusage held by the manufacturers, and the quantity of cotton exported; the statistics to be summarized as of September 1, each year, so as to show the cotton production and consumption of the preceding year.

And the director of the census shall make semi-monthly publication of the amount of cotton ginned, in lieu of the monthly reports which he now makes.

Inasmuch as the Act of March 6, 1902, had ordered the publication of a weekly bulletin on cotton-ginning, it had been expected that the Census Office would be in position to publish the full number of bulletins ordered by the act throughout the cotton-growing season. This, however, proved to be impossible. When an effort was made to organize the office for the work, it was found that the appropriation in hand did not permit of telegraphic transmission of the reports coming from the special agents who were appointed to visit the cotton-ginning establishments. The reports had to be sent by mail.

Moreover, it very shortly appeared that the task of compiling a complete list, and of setting on foot the elaborate machinery necessary to secure accurate results, would be so great as to prevent the bureau from fully complying with the law, during the first year at least. It was therefore determined to publish, during the year 1902-3, only three sets of returns, or about one every two months, instead of one each week as ordered by the act. Note was taken of this fact at the succeeding session of Congress, but the House of Representatives not being willing to authorize the very greatly enlarged outlay which would be required in order fully to carry out the ideas of sec. 9 of the permanent census act, the office continued on the same basis as before, although with somewhat enlarged facilities and increased appropriation. Greater experience and the passage of time enabled it to improve the number and quality of the reports. During the year 1903-4 this number was raised to six, to eight in 1904-5, and a total of ten reports was ordered for the current season 1905-6, or approximately one every two weeks.

In organizing the original system under which the ginning figures were to be gathered, the Census Bureau was able to gain considerable assistance from the early bulletins issued during the continuance of the regular census. In a bulletin dated March 5, 1901, the census had already given statistics relating to ginneries for the cotton-growing states, as follows:

States and Territories	Total	Number of Gin- neries Operated for the Public Only	Number of Gin- neries Operated for the Plantation Only	Number of Gin- neries Operated for Both	Average No. of Months in Oper- ation for Crop of 1899
Alabama	4,034	792	391	2,851	3
Arkansas	2,630	668	133	1,829	3
Florida	236	73	10	153	3
Georgia	4,729	696	572	3,461	4
Indian Territory.....	297	215	6	76	4
Kansas	2	1	...	1	2
Kentucky	2	1	...	1	1
Louisiana.....	2,148	190	361	1,597	3
Mississippi.....	3,976	519	580	2,877	4
Missouri.....	56	40	...	16	3
North Carolina.....	2,573	431	278	1,864	3
Oklahoma	133	109	...	24	3
South Carolina.....	3,368	298	381	2,689	3
Tennessee.....	834	255	45	534	3
Texas	4,514	2,165	100	2,249	4
Virginia.....	88	15	6	67	3
Total	29,620	6,468	2,863	20,289	19

It was resolved at the outset that no good results could be obtained without regular pay for the agents engaged in collecting the figures. Instead of having unpaid or voluntary agents in the different countries, it was decided to procure a staff of trained and paid men who would send in reliable and trustworthy reports. It was found that the work would require about three weeks or more or less constant attention on the part of the agents, one week to each report, and this necessitated the payment of a substantial consideration for the service rendered. A field organization was perfected under which one representative of the Census Office was appointed in each county which showed as many as ten ginneries. Where practicable, it was sought to charge the establishments showing less than ten ginneries to the agents of neighboring counties of large cotton production. Report cards were furnished to these agents, and they were required by personal visit to each ginnership to ascertain the exact number of bales turned out by it up to and including the date of the agent's call. In the unorganized counties, letters of instructions, together with report cards, were furnished to the ginnerers themselves, and they

were asked to furnish information concerning their establishments simultaneously with the reports of the agents in the organized counties.

How complete was the organization thus perfected can be seen from the following brief review, showing the state of affairs after the organization had been perfected :

Number of counties individually organized.....	648
Number of counties organized by combination.....	15
Total number of counties organized.....	663
Number of ginneries in the organized counties.....	28,974
Percentage of cotton crop produced in 1901 by the above counties	99.4
Number of cotton-producing counties left unorganized....	98
Number of ginneries in the unorganized counties.....	280
Bales of cotton produced in 1901 in unorganized counties..	63,993
Number of local agents.....	648
Total remuneration to these agents.....	\$49,754
Average compensation for the agent per season.....	\$76.77

It thus appears that all but about six-tenths of one per cent. of the crop as ginned in 1901 was unprovided for, this small remnant being located in outlying districts which produced very little cotton. About 29,044 establishments, out of the total of 29,620 reported in 1901 (of which only 29,254 were supposed to be active), were thus to be reported upon, while even from the omitted establishments it was expected that returns would be gathered for the last report of the season, when opportunity had been afforded for all returns to come in by mail. While the average compensation of agents was small, it was sufficient to make the work an object with the men engaged. In the case of many agents occupied with a large number of ginneries the pay ran very much higher, amounting in some cases to over \$600 per season.

Since organization was fully perfected in the first year, no substantial changes have been introduced into the census methods. The number of ginneries has been increased to about thirty-three thousand now on the list. The number of agents has been raised to some 675, and the pay of the agents has been slightly added to. In some ways there has been an elimination of conditions which

tended toward inaccuracy. But on the whole, the organization has continued along the lines on which it was started. Only one serious obstacle has been encountered—the disposition of ginner and producers at times to conceal their output, or to form cliques designed either to manipulate prices or to report their production erroneously with that end in view. In the main, however, it may be said that these difficulties have not proved serious, and that the errors they have introduced into census figures have been of a minor character. The census figures have been very thoroughly justified by results, as indicated in the commercial movement of the crop.

II

The methods employed by the Department of Agriculture in collecting its statistics have for a good while been known in a general way. In a former number of this *Journal*¹ has been given an outline sketch of the actual procedure adopted by the department in getting up its statistics for all crops. Details were for a long time withheld, but comparatively recently more information has been furnished, particularly with reference to cotton, the staple now under special consideration. Owing to dissatisfaction, in some quarters, with the work of the Department of Agriculture, a resolution was submitted to the House of Representatives, December 16, 1904, by Hon. Leonidas F. Livingston, of Georgia, in which he put forward the claim that there had been great want of confidence in the work of the Bureau of Statistics, and suggested that the secretary of agriculture be requested to forward to the House of Representatives all data, in detail, upon which the latest report of the department was based. This resolution was finally allowed to lie upon the table, but in the hearings concerning it, December 17, 1904, much valuable information as to statistical method was offered by Statistician Hyde, who was then at the head of the Bureau of Statistics.

Moreover, a year earlier, in January, 1903, the secretary of agriculture had sent to Congress a letter in which he dealt with the question of amalgamating the crop reports service of the

¹ December, 1902.

Weather Bureau with the crop reports of the Bureau of Statistics. This letter was doubtless prepared from data furnished by the Bureau of Statistics. These two sources of information are the most complete and authentic that are available for the study of the methods of the department. In the letter of the secretary of agriculture sent to Congress in January, 1903, the general organization is described as follows :

As already stated, the principal features of the crop-reporting system of the Division of Statistics is the correspondence of a large number (upward of 250,000) of farmers, bankers, merchants, cotton-ginners, agents of transportation lines, mill and elevator proprietors, and other persons. The actual number of persons thus reporting, however, great though it is, does not constitute the strength and value of the system so much as the fact that various interests are represented in it, and that the use of different geographical units (state, county, township, etc.) affords an additional check.

The organization includes thirty-eight state statistical agents, receiving compensation at the rate of from \$300 to \$800 per annum. Each of these maintains a corps of correspondents entirely independent of those reporting directly to the department at Washington, and such correspondence, ranging in number from 21 in Delaware to 517 in Michigan, aggregate 9,048. The state statistical agent does something more than merely tabulate the reports of his correspondents, or the work could be done just as well in Washington. He analyzes and co-ordinates them in the light of his own knowledge of conditions derived from personal observation and other sources.

In each agricultural county the Division of Statistics has a correspondent who makes the county the geographical unit of his reports. Every such correspondent has from two to four assistant correspondents, whose duty it is to keep him informed as to the agricultural conditions prevailing in their respective districts. These county correspondents and sub-correspondents number 10,792.

In every township and voting precinct in the United States in which farming operations of any kind are carried on, the Division of Statistics has a correspondent who makes such township or precinct the basis of his reports. These correspondents number 30,232.

The state statistical agents and their correspondents, together with the county and township correspondents, numbering in all 50,072, report eleven times in each year.

For the purpose of rendering his cotton reports more complete and reliable, the statistician also corresponds, during the growing and picking season, with 61,170 public and private ginneries, and with 14,577 bankers, merchants, and other persons not actual cotton-growers.

Similarly, as a check upon the reports on cereal production, he utilizes the services of 24,074 millers, elevator men, and other non-farmers.

Finally, at the end of the growing season, 84,154 farmers and planters report on the results of their own individual farming operations during the year, and about 22,000 agents of railroad and other transportation lines report as to shipments and stocks of cotton.

Seven special cotton agents, stationed at as many principal southern cotton markets and paid a compensation of from \$20 to \$50 per month each, report weekly as to the receipts and shipments of cotton. Every transportation line in the South reports the amount of cotton it carries, with the points of origin and destination, and southern mills, without a single exception, report their purchases of cotton during the year for use in the preparation of the final cotton report issued as soon after the close of the cotton year as the necessary data can be collected and compiled.

The number of statistical correspondents of all classes in the cotton states, inclusive of railroad and other transportation agents, is 147,261, and the total number in all the states and territories in the Union is 256,047, ranging from 285 in Nevada to 20,094 in Texas.

The Division of Statistics has also six special field agents, whose duty it is to watch carefully the development of each important crop throughout the entire period of its growth and to keep in close touch with the best-informed opinion in regard to conditions and prospects.

The reports received from all these various sources are not dealt with in mass, but those of each class are separately tabulated, with a view to the determination, for the statistician's future guidance, of their respective approximations to accuracy.

The total number of reports handled by the seventy employees of the Division of Statistics in Washington has been as high as 2,500,000 in a single year.

Further information of an interesting character was afforded in the later statement by Mr. Hyde before the House Committee on Agriculture already described. Mr. Hyde then said:

The department began its crop-reporting system with county correspondents only about forty years ago, and it has at the present time 259 correspondents who have been reporting to it for twenty years or longer. In 1887-88 state statistical agents were added, each with a well-organized corps of correspondents entirely independent of those reporting to Washington. In 1896 township correspondents were added, and since I became the statistician we have had reports from ginners, and have made a special list of bankers and merchants, and one of planters, and the reports from all these different classes of correspondents are tabulated separately; that is to say, those of each class separately for each state, and the results are arranged in parallel

columns, and at the last moment, behind locked doors, I open the sealed reports of the state statistical agents and those of the special field agents, and add their estimates in the proper places. And I know the tendency, where there is one, on the part of a state statistical agent to be rather optimistic or rather pessimistic, as the case may be, and am governed by my knowledge of the men and of the different classes of correspondents in working out the official figures.

The average for each class of correspondents for each separate state is compared with the averages for all the other classes for that state in the light of their respective approximations to accuracy in other years, but there is no choosing between the reports of two or more correspondents for the same locality, as some people suppose; indeed, it is only in rare instances that two persons report for the same geographical area, one of the chief elements of strength in the department's crop-reporting system being the fact that the different classes of correspondents report, as I shall presently show, for geographical units of different sizes.

Just how this organization works in a specific case was also indicated by way of illustration in the following colloquy between the chairman of the committee and Mr. Hyde on the same occasion:

THE CHAIRMAN: If it would be proper at this place, suppose that you tell the committee now what is your organization in the several states. Take the state of Georgia, for example; tell us how you organize the state of Georgia to gather these data.

MR. HYDE: We have as state statistical agent a Democratic ex-governor of the state, a man of the very highest character, who was appointed state statistical agent by Secretary Morton in 1894, and has been retained through the last two administrations by Secretary Wilson—an admirable man in every respect, ex-Governor Northen, with whose name I am sure every member of the committee will be familiar. He has a large corps of correspondents, who report to him at Atlanta, and who are entirely independent of the correspondents reporting to Washington. He compiles their reports himself, and makes them the basis of his own report to the statistician at Washington, in which he deals with the state as a unit.

Then, in every county in Georgia, as elsewhere, we have a county correspondent, who has sub-correspondents in the remoter parts of the country, who report to him on the conditions and prospects in their respective localities. The county correspondent makes the county the geographical unit of his report to Washington, and the reports of all such correspondents are tabulated separately from all others.

Then, in every township—I do not think the designation “township” is much used in the South, but in every election precinct, rural ward, and militia

or magisterial district—we have a correspondent who makes that particular minor civil division the geographical basis of his reports, and the reports of all such correspondents are tabulated by themselves.

MR. HYDE: Now, as to the ginner, while we sometimes ask them as to the amount of cotton ginned up to a certain date—as compared with the amount ginned up to the corresponding date a year ago—the principal service they render us is not in their capacity as ginner, but merely as men who are in an exceptionally favorable position for judging as to the condition and prospects of the cotton crop. We do not apply to them every month, but at the beginning of the season we ask them as to the increase or decrease in acreage, and at the end of November as to the average yield of cotton per acre. Their reports constitute an instructive and a most valuable body of testimony, especially when tabulated, as they are, separately from those of other correspondents. Another important class of correspondents well represented in Georgia is composed of bankers and merchants, and their reports also are tabulated separately.

THE CHAIRMAN: Separately?

MR. HYDE: Yes, sir. And then a large number of individual planters are invited to report, not as to what is within their own general observation, but as to their experience on their own farms and plantations exclusively, and their reports also are tabulated separately.

And then finally we have our traveling agents.

MR. SCOTT: I understand, then Mr. Hyde, that in making up this year's estimate of the cotton crop, you first took the mean of estimates of each one of your different classes of reporters, and then you took the mean of all those estimates—the mean of that mean—and multiplied that by the acreage?

MR. HYDE: Not exactly; we ascertained the mean as a matter of information, and in no case did we deviate very much from it; but we always considered the relative weight to be attached to the reports of the different classes of correspondents. Suppose I take the state of Georgia and give you the exact figures of all classes of correspondents and the figures that we took.

MR. SCOTT: Very well.

MR. HYDE: The figures of the county correspondents for the state of Georgia show an average of 203 pounds per acre. The township correspondents also show 203 pounds per acre. The special correspondents, bankers and merchants, show 205 pounds. The special field agents report 205 pounds. The state statistical agent, ex-Governor Northen, reports 206 pounds. The ginner show 212 pounds. The individual planters show 221 pounds.

The statements thus offered give a very much clearer notion of the methods actually employed in the Department of Agricul-

ture than had ever before been furnished, but the information was still incomplete, since it afforded no knowledge as to the accuracy of statistical sources. It will have been noted that much stress was placed, in the excerpts already made, upon the returns furnished by cotton-ginning establishments. It was evidently of primary importance that the list of those establishments should be accurate, the more so as this was the only source of information as to facts as distinct from opinions. Otherwise the returns obtained from the ginners as a whole would evidently be unreliable. In spite of the apparently reassuring statements of the department authorities, as just set forth, doubt and suspicion were aroused in the minds of many by the fact that, although the census—purporting, as it did, to give a complete return from all ginning establishments—gave results as derived from only some thirty thousand gins, the Department of Agriculture professed to give results from no less than about sixty thousand. This difference in the size of the two lists aroused the curiosity of the House Ways and Means Committee during the Congressional session in the winter of 1903. Proposed legislation on the taxation of cotton being then under debate, Director Merriam of the Census and Secretary Wilson of the Department of Agriculture agreed to have an investigation and comparison of the ginning lists of the two statistical offices. It then appeared that, of all the gins found on the lists of the Department of Agriculture, numbering more than sixty thousand, only fifty or sixty were missing from the lists of gins compiled by the Census Office. On the other hand, nearly nine thousand gins, included in the lists of the Census Office, were not to be found on that of the Agricultural Department. Such a result had been rendered possible simply by the fact of enormous duplications in the list of the Agricultural Department. In some instances the books of the department showed that a single gin figured under as many as nine different names, and was therefore counted, with its output, nine separate times. Moreover, the errors of the department appeared to be as grave in the matter of omission as in that of duplication. In the state of Georgia alone it turned out that the gins omitted from the list of the Department of Agriculture were those which

produced over 50 per cent. of the output of cotton for the state. Although the Bureau of Statistics, later on, endeavored to obscure the facts in the case by attempting to show that the census list included practically only "public gins," while the department listed the names of private planters who did their own ginning, the facts in the case were too obvious to admit of controversy, and the list of the department stood completely discredited.

If this were to be taken as a fair index of the methods employed by the department, it is evident that the confidence that should be accorded to its returns would be exceedingly small. But such is probably not the case. The ginning list of the department, for reasons not necessary to recapitulate in full, was undoubtedly much more defective than any other feature of the department's work. While there is, and probably must necessarily be, a great deal of surplusage and duplication in all of its lists, as well as many unreliable sources of information, there is no other crop-reporting agency in the country, similarly organized, which can begin to compare with it in the number of its reporters and the elaborateness of its organization. Whether these two factors enable the department to secure accuracy in its results is a question which should be judged on the basis of what has actually been done rather than of the machinery that has been employed to do it.

III

It is now time to inquire how far the methods just described have succeeded in realizing accuracy with reference to the cotton crop, and how far, if at all, a test can be applied to the two sets of statistics, in addition to that which is gained by checking one against another. The Department of Agriculture publishes three sets of figures bearing on the cotton crop—an annual estimate of production, published as of December 3 of each year at the end of the growing season; an annual estimate of acreage, published early in June; and five condition reports during the growing season, designed to show to changes in crop prospects attributable to variations in weather and climatic conditions.

It is natural to turn attention primarily to the actual produc-

tion figures, when seeking for a test of the work of the various statistical agencies, since this, after all, is the outcome toward which efforts are directed. There are, however, certain other aspects of the case. But, before turning to these, it will be instructive to compare the final results obtained by the census and the Department of Agriculture. Moreover, these may profitably be compared and tested by the commercial returns. Of such commercial returns the best figures available are probably those of Mr. Henry G. Hester, secretary of the New Orleans Cotton Exchange. Mr. Hester, in the course of thirty-five years' experience, has succeeded in making very perfect arrangements with railroad companies whereby they furnish all data concerning the commercial movement of the crop. Besides this source of information, he has also a system of securing returns from mills and other establishments. His figures are recognized as being probably the best in the commercial world, and may therefore be used as a valuable check.

The following tables, lately unofficially compiled in the Census Office at Washington, and not hitherto published in permanent form, give some answer to the question how far accuracy has been realized by the Department of Agriculture, the census, and the commercial estimators.

The following table brings into comparison statistics of the volume of the cotton crop grown in 1899 to 1904 inclusive, as compiled by the Census Bureau, the United States Department of Agriculture, and as measured by the commercial movement :

Growth—Year	Census Bureau — Bales *	Department of Agriculture — Bales	Commercial Crop — Bales
1904	13,597,782	12,404,642	†
1903	10,014,455	10,156,486	10,011,374
1902	10,784,473	10,613,223	10,727,559
1901	9,757,520	9,849,000	10,680,680
1900	10,252,102	10,250,000	10,383,422
1899	9,507,786	9,014,544	9,436,416

* Counting round as half bales.

† The commercial year does not end till September 1. The quantity in sight at the end of June was 12,734,348 bales.

The statistics of the United States Department of Agriculture are in net weight bales. In order to make the proper comparison with the other authorities which show gross weight bales, twenty pounds per bale has been added to the department's statistics to cover weight of bagging and ties. Again, as it is understood that the statistics of the department do not include the linters obtained by the cottonseed oil mills from reginning cotton seed, the amount of these linters has been added to the statistics of the department for each year. Statistics of these linters were not collected by the census for the crops of 1901 and 1900, and the estimates added are 175,000 for 1901 and 150,000 for 1900.

The average bale weight employed by the different authorities varies considerably. The statistics of the table already given are in bales as reported by the different authorities. For the purpose of making a more equitable comparison, these statistics have all been reduced to a uniform standard of 500 pounds, and presented as follows:

Growth—Year	Census Bureau— Bales*	Department of Agriculture — Bales	Commercial Crop— Bales
1904.....	13,584,457	12,891,150
1903.....	10,045,615	10,371,665	10,171,556
1902.....	10,827,168	10,836,147	10,899,200
1901.....	9,709,745	9,620,694	10,851,571
1900.....	10,248,027	10,250,000†	10,591,090
1899.....	9,459,935	9,103,544	9,511,907

* Five hundred-pound bales.

† Average weight of bale not known; five hundred pounds assumed.

From the foregoing results it would appear as if the Department of Agriculture had on most occasions been able to make some approximation to the correct returns. The worst slip seems to have occurred in 1904, which was the year when the statistician was said to have been led to alter his method of estimate, because of the very large size of the crop indicated by the method formerly pursued. Taking the figures as a whole, however, it would scarcely seem as if there were ground for extreme criticism, when the difficulties of the estimate are considered.

The fact remains that the returns of the Department of Agri-

culture have been subjected to very severe complaint. Those, however, who seek to base a defense of the department upon the character of its annual estimates hardly take account of the real facts in the situation. As already noted, the department also publishes acreage figures early in June, and condition figures five times during the year. Complaint has, in the past, chiefly proceeded from those who had cotton to sell or cotton to buy, or who were engaged in speculation. Active business men are not statisticians primarily. They are interested in figures so long as they relate to actual conditions, and no longer. They have no time to spend in delving into history. What concerns them is the question how far the figures actually furnished from time to time by the Department of Agriculture or by any other statistical office, actually corresponds to facts and influence prices one way or the other. Attention must, therefore, be turned not only to the final figures put forth by the department, but also to the acreage returns and the condition figures.

In dealing with the latter, however, difficulty is encountered in finding any regular test that can be applied to the figures. There are several excellent and reliable sources of information as to cotton conditions, but inasmuch as they are all of private character, it has been customary, in certain quarters, to try to discredit them by intimating that they were influenced by the desire of influencing the market. The difficulty in the situation is apparent. It is possible for an estimator, whether government or private, to maintain that his condition figures are always given out on the basis of the best judgment, character, and ability that can be commanded and later, when facts tend to indicate that his previously expressed views must have been erroneous, it is perfectly possible, by raising the subsequent condition figures, to bring about an average corresponding quite closely with the facts as indicated by actual experience. It may be well, however, to offer a brief review of the condition figures of the Department of Agriculture during the past few years, as compared with a ten-year average. This has been done in the following table:¹

¹ *Crop Reporter*, January, 1905, p. 77.

Condition on —	1904	1903	1902	Ten-Year Average
May 26	83.0	74.1	95.1	85.8
June 26	88.0	77.1	84.7	84.8
July 25	91.6	79.7	81.9	82.7
August 25	84.1	81.2	64.0	73.2
September 24	75.8	65.1	58.3	66.8

One of the things that chiefly strike an observer who glances over these figures is the great variations in condition which they indicate. These variations might conceivably be due to changes in weather conditions. On the other hand, it is equally true that such changes in weather conditions make it correspondingly hard for the correspondents of the Department of Agriculture to know exactly what is occurring around them. Without going further into this situation, it may be said that there has probably never been a condition report of the Department of Agriculture which did not receive more or less criticism, and which was not entitled to less or more of just such fault-finding. The real complaint of the department's work is, in fact, to be found in connection with its condition figures. Moreover, what is true of these figures is true, in a somewhat less degree, of those for acreage. The difficulty of estimating acreage planted is in itself great, but the subsequent changes due to abandonment of acreage, and other factors of like importance, render this class of figures nearly, if not quite, as dangerous as the condition statistics.

IV

In spite of all efforts to secure a check upon acreage and condition figures, it thus becomes apparent that the only real safeguard that can be relied upon in keeping such estimates as trustworthy as possible is excellence of organization and information, and above all honesty and single-mindedness on the part of the men in charge. All of these qualities have been vigorously claimed by the Bureau of Statistics of the Department of Agriculture, and until lately many persons have been inclined to concede their possession to the bureau.

There have not been wanting, however, persons who have frequently contended that conditions in the Bureau of Statistics of the department were not all that could be wished. Irregularities in the bureau were detected some years ago by the Civil Service Commission, and from time to time positive and specific charges have been made. These charges covered two points: first, that information was given out in advance by officials of the bureau to speculators upon the exchanges; and, second, that the reports of the bureau were manipulated in the interest of these speculators. It is obvious that, while the first charge would not necessarily imply defectiveness in the reports themselves—although, of course, evidencing most serious dishonesty on the part of those guilty of the practices alleged—the second charge would imply a disastrous reflection upon the accuracy of the statistics. On the other hand, it should be borne in mind that in order to give such statistics any influence upon the market, they must in a general way show a correspondence with known facts. Were this not the case, they would speedily be discredited by the commercial world, and would entirely lose the power of influencing prices. This also is a point that should be remembered when it is sought to defend the work of the department because of the approximate accuracy of its annual production figures.

Such charges have heretofore been uniformly rebutted by the Department of Agriculture, usually with indignation and contempt. Sometimes private persons, writing to the department for the purpose of laying before it either evidence or complaints, or both, have been openly sneered at or discourteously answered by those in charge of the Bureau of Statistics. Secretary Wilson himself, accepting the opinions of his trusted subordinates, has adopted too positive a tone. His utterance in the well-known letter to Senator W. B. Allison, published in March, 1902, is representative. In that letter he said:

The position of the department is absolutely unassailable, since with regard to the more important crops no approach to a definite estimate can possibly be made until within one or two hours of the time fixed for its publication.

Other utterances have been equally positive, indicating that

the secretary entirely declined to accept the notion that the corrupt furnishing of information was possible, while he apparently had no idea of the danger that the estimates, when actually given out, might be manipulated for the purpose of attaining a definite object.

A rude shock to the self-satisfaction and hostility to criticism thus displayed by the department and its head was administered early in June of 1905, when the Southern Cotton Growers' Association, through its secretary, laid before Secretary Wilson what appeared to be positive evidence of the existence of both of the evils already referred to—the early conveyance of statistical information to private individuals, and the manipulation of figures in the interest of particular persons or groups of persons. An investigation carried on during June and the early days of July revealed facts that were apparently sufficient to warrant Secretary Wilson in retiring at least one employee of the Bureau of Statistics. This was the associate statistician, Mr. E. S. Holmes, Jr., who was accordingly compelled to withdraw from the bureau.

The retirement of Mr. Holmes, and the general conditions revealed in the course of the inquiry, led Secretary Wilson to make what he considered an important change in the method of crop-reporting pursued by the Bureau of Statistics. As this report order introduces some changes into the method of crop-reporting already described, and is the central feature about which current discussion of the government statistical situation revolves, it is thought best to reproduce the order in full, as given out in typewritten form by the department:

UNITED STATES DEPARTMENT OF AGRICULTURE,
OFFICE OF THE SECRETARY,

WASHINGTON, D. C., July 8, 1905.

ORDERS GOVERNING THE PREPARATION OF MONTHLY CROP REPORTS OF THE BUREAU
OF STATISTICS

It is hereby ordered that the following methods be used hereafter in the Bureau of Statistics of this department in the handling, compilation, and preparation of monthly crop reports:

1. The following classes of correspondents send their reports to the Bureau of Statistics for tabulation:

County correspondents.

Township correspondents.

Individual farmers.

Cotton-ginners.

Special cotton correspondents.

The schedules sent in by the above-named correspondents are tabulated in the Division of Domestic Crop Reports.

In order to prevent the possibility of collusion among any of the clerks engaged in this tabulation, or of any individual clerk drawing deductions from the results shown for any state or states tabulated by him (which they, or he, might be tempted to disclose improperly), the following method must be employed in dealing with states of relatively large production:

a) After the schedules have been tabulated on the sheets for the respective states, the figures thereon shall be added for each crop represented, so as to show a total for only a portion of the state, omitting a group of counties at the bottom of the sheet; as rapidly as such partial totals are made, the sheets must be handed to the chief of the division.

b) The chief of the division will then number the tabulation sheets at the top (where the names of the states to which they relate are written) and at the foot (where there is nothing to indicate the states to which they relate), using the same number at both the top and the foot of each sheet. He will place these numbers on a separate sheet kept on his desk—without making any memorandum to show the states to which they pertain, but for the purpose of avoiding the use of the same number on sheets relating to different states.

c) The chief of the division will then personally cut the tabulation sheets in two parts, so that the partial total will be at the top of the lower part, and so that no names of counties will appear thereon.

d) He will immediately deliver the upper part, upon which the name of the state is written, to the statistician.

e) The chief of the division will then issue the lower parts of the tabulation sheets to clerks, in other rooms from those in which they were tabulated and partially added, who will make the final additions and compute the averages thereon. As rapidly as they are completed by the clerks, the chief of the division will deliver them to the statistician, who will be able to assign the figures to their proper states by means of the numbers placed on the top and on the bottom of the sheets before they were cut in two.

f) The tabulation of county and township correspondents' schedules relating to cotton in Texas and Georgia shall be delivered by the chief of the division, as soon as completed, to the secretary or assistant secretary of agriculture (instead of to the statistician), who will keep said sheets in a

locked receptacle until the morning of the day on which the cotton report is issued, when they will be delivered to the statistician by the secretary or assistant secretary.

2. The reports of state statistical agents are handled only by the statistician and his associate.

In order to prevent access to such of these reports as relate to speculative crops by any person connected with the Bureau of Statistics, prior to the day on which the bureau's report to which they relate is issued, or the possibility of premature information being derived from them, they will be addressed to the secretary of agriculture, the address to be written with red ink, and the letter "A" to be plainly marked on the ends of the envelopes in which they are transmitted. The letters thus addressed will be delivered by the postal authorities to the secretary of agriculture, or assistant secretary, in sealed mail pouches. These pouches will be opened only by the secretary of agriculture, or assistant secretary, who will place their contents in a safe, with seals unbroken, where they will remain, sealed, until the time arrives for their use in preparing the crop estimates.

a) In regard to cotton: These reports of the state statistical agents shall not be removed from the safe and their seals broken until the morning of the day on which the report on cotton is issued, when they will be delivered to the statistician by the secretary or assistant secretary.

b) In regard to other crops (reports upon several of which are made each month by the state statistical agents): Agents shall be instructed to inclose their reports relating to what are known as "speculative crops" (such as wheat, corn, or oats) in separate envelopes from their reports on other (non-speculative) crops, plainly marking the first envelopes "A" and the others "B."

The envelopes marked "A" (containing reports on speculative crops) shall be placed, with their seals unbroken, in a safe, and there remain until the morning of the day on which the report of the bureau is issued, when they will be delivered by the secretary, or assistant secretary, to the statistician. The envelopes marked "B" (containing reports on non-speculative crops), which will be addressed to the Bureau of Statistics, can be opened when received, and the data they contain used by the statistician in computing estimates regarding the crops to which they relate, in advance of the day on which the bureau's report is issued.

c) The combination for opening the safe in which the above documents are kept shall be known only to the secretary and assistant secretary of agriculture.

3. Reports of special field agents must be made and handled in the same manner as those of state statistical agents.

4. On the day on which the report of the bureau is issued, the statistician's room, in which he establishes his final figures, must be kept locked, and no one not engaged in assisting him permitted to enter; also, those in the

room must remain there until the report is issued, unless permitted to leave, temporarily, by the secretary of agriculture.

a) No one shall be allowed in said room on the day on which the report of the bureau is issued, except the statistician, his associate, his stenographer, and the secretary or assistant secretary of agriculture, without permission of the secretary of agriculture.

b) The final computations of the United States, relating to cotton and speculative crops, based on the figures determined by the statistician for the different states, shall be made by clerks locked in the room adjoining and opening into the statistician's room, who shall not be permitted to leave said room until the issuance of the bureau's report, without permission of the secretary of agriculture.

c) The final computations for the United States, relating to non-speculative crops, may be made by clerks under the direction of the chief of the Division of Domestic Crop Reports.

5. The telegraphic reports of state statistical agents and of special field agents, regarding cotton and other speculative crops, must be addressed to the secretary of agriculture; those relating to non-speculative crops should be addressed to "Hyde."

a) Telegraphic reports addressed to the secretary of agriculture shall be placed in the safe unopened, and there remain until the morning of the day on which the bureau's report is issued, when they will be delivered to the statistician.

b) Telegraphic reports addressed to "Hyde" may be used as received by the statistician prior to the date of the issuance of the report.

6. Care of records. The tabulation sheets, and the sheets containing the preliminary and final computations of the statistician and his associate, relating to each monthly crop report, together with all letters and reports from state statistical agents, special field agents, or anyone else, relating thereto, shall be filed in a library case, used exclusively for that special purpose, and kept locked therein, except when needed for use by the statistician or his associate.

a) These records shall be so kept in the library case that all tabulation sheets, reports, letters, and computation sheets, relating to any month, shall be together, and shall be wholly separated from those relating to any other month.

b) The records shall not be accessible to any person other than the statistician and his associate without an order from the secretary or assistant secretary; except that tabulation sheets for a preceding year may be used by the chief of the Division of Domestic Crop Reports for the purpose of copying the column headings and county weights, when preparing blank tabulation sheets for future use.

7. All telephones in the Bureau of Statistics must be disconnected before

9 A. M. of the day on which the bureau's report is issued, and so remain until after its issuance.

From this order it will be seen that the methods of the Bureau of Statistics will be reorganized along certain lines; notably that the general special field agents and the state agents will report on speculative crops directly to the secretary or acting secretary of agriculture, and these reports will remain sealed in the custody of those officers until the day the official report is to be made, when the agents' reports will be opened and the official report compiled under the precautions stated in the order. There will never be, at any time, in the possession of the Bureau of Statistics, or of any one office of the department, except while the compilation of the official report is being made, complete information from the correspondents of all the cotton states. Texas and Georgia, two of the largest cotton-producing states, will be separated from the group of reports from townships and counties. Hereafter there will be three general special field agents instead of one assigned to the work of collecting statistics for the cotton-crop reports. These agents will have no communication with each other and will report on different groups of states.

There will be no more opportunity for advance information on reports of speculative crops.

It will be seen that the order issued by Secretary Wilson, as just set forth, has in no respect introduced a change into the essential methods pursued by the bureau in preparing either its cotton or other crop estimates. Whether the order in any respect improved the conditions prevailing in the department as to privacy in the handling of the figures can be finally seen only from experience not yet at hand.

Secretary Wilson, however, has not been content to stop with the innovation already described. Not long after the close of the investigation which led to the retirement of Mr. Holmes, the demands of various industrial interests led Chief Statistician Hyde to hand in his own resignation, thus leaving the Bureau of Statistics without a chief. Secretary Wilson determined not to appoint a successor to Mr. Hyde for the present, but in place of such action he assigned Assistant Secretary Hays, of the Department of Agriculture, to duty as general supervisor of the preparation of crop reports. At the same time, a so-called "crop estimating board," consisting of four members of the Bureau of Statistics, was given charge of the actual work of preparing crop estimates, subject, of course, to Mr. Hay's supervision.

About the first thing done by this board was to issue a statement which tended still further to discredit the Bureau of Statistics. This discredit did not arise from any irregularities on the part of the board, but from information which circumstances obliged them to give to the public. The dismissal of Mr. Holmes and the resignation of Mr. Hyde had thrown increased doubt upon the June acreage estimate issued by the bureau under the supervision of Messrs. Hyde and Holmes. A strong demand for a recompilation of statistics as to 1905 acreage was immediately set on foot by cotton-growers, and led to a general review of the data already at hand in the bureau, it being felt by officials that no particular advantage would accrue from the expensive process of recompiling field data for 1905 acreages. As a result of this investigation, the crop-estimating board issued the following statement, by which the official estimate of acreage for June was made to show a decline of 14.9 per cent. as compared with the year previous, instead of 11.4 per cent.—the estimate which had been given out under the old régime :

The crop-estimating board of the Department of Agriculture has considered the report issued by the Bureau of Statistics on June 2, relative to the acreage planted in cotton in the southern states in 1905, as compared with that planted in 1904, and has concluded :

1. That a new estimate should be made on acreage planted, and that the figures in Mr. Hyde's hands when making his statement should be used as the basis.

2. That Mr. Hyde, with Mr. Holmes at his elbow prompting him, made the estimate lower than the facts at his hand from the reports from the seven classes of reporters employed by the bureau warranted.

3. The board finds, upon careful consideration of the reports of all classes of correspondents and agents, that the acreage planted in cotton this year, including the entire season, should have been estimated at 85.1 per cent. of that planted last year, equivalent to a reduction in planted acreage, as compared with last year, of 14.9 per cent. (instead of 11.4 per cent.), or 4,731,000 acres—the estimate of the total acreage planted this year being 26,999,000 acres.

The estimated percentage of the decrease in each of the cotton-growing states is as follows: Virginia, 18; North Carolina, 16; South Carolina, 14; Georgia, 14; Florida, 12; Alabama, 11; Mississippi, 16; Louisiana, 17; Texas, 16; Arkansas, 19; Tennessee, 13; Missouri, 15; Oklahoma, 15; Indian Territory, 11.

The averages were made for each state by each of the four members of the board, and the comparatively small disagreements were harmonized almost wholly by averaging, and the above results are fully agreed to by each and every member of the board.

Respectfully submitted,

VICTOR H. OLMSTEAD,
STEPHEN D. FESSENDEN,
GEORGE K. HOLMES,
W. W. LONG,

Crop Estimating Board.

The above findings and report made under my supervision have my entire approval.

W. M. HAYS,
Assistant Secretary in charge Bureau of Statistics.

Approved,
JAMES WILSON,
Secretary of Agriculture.

This statement had the discrediting influence already referred to in two distinct ways: it conceded the erroneous character of work which had already been loudly proclaimed to be correct, and at the same time the second count in the finding reflected seriously upon the situation in the bureau. Moreover, the finding was not in accord with that of any other statistical agency. The cotton report of the *New York Journal of Commerce and Commercial Bulletin* had already stated the decline in acreage as 12.3 per cent., or even less, on June 1, as compared with former years. Cotton-growers had claimed a decrease of fully 18 per cent. The return, therefore, made by the crop-estimating board was not able to enlist in its support any distinct section of opinion.

With the prestige of the Bureau of Statistics thus seriously diminished, the Department of Agriculture shortly was attacked at other points. Bad conditions developing in one or more new bureaus, the reflected light of the scandals there uncovered, did much to lend an even uglier appearance to the statistical situation than it should naturally have had. The condition of affairs thus produced has continued to the present time, and the net result has been to throw the statistics of the department into a condition of deeper discredit than they had occupied for a good while past. The safeguard referred to at the beginning of this section, there-

fore, as the only one possible, where acreage and condition figures are involved, has proved itself wholly wanting in the statistical service of the Department of Agriculture. While it is undoubtedly true that honest men are in charge of that service, the problem of fully restoring public confidence will be slow in its outworking, and the question becomes very practical: What can the department do to rehabilitate its crop service and once more re-establish itself upon a proper basis in the public mind?

V

The question, What should be done in reorganizing the cotton statistics of the government? should be treated, it would seem, as a part of the larger question: What should be done in putting the general agricultural statistics of the country on a proper basis? This is a statement which seems almost self-evident to the impartial man; yet it is one which is sharply contested by persons who think that they have interests leading in other directions. For example, the Southern Cotton Growers' Association, since the disturbances in the Department of Agriculture, has come forward with the following suggestions:

1. The establishment within the Department of Agriculture of a bureau to be known as the "Cotton Bureau," charged specially and solely with the duty of reporting upon the cotton crop and all matters concerning that staple.
2. The appointment as the head of that bureau, at an adequate salary, of a man whose reputation and antecedents shall be beyond reproach, and whose familiarity with cotton cultivation shall be an additional guarantee of his fitness.
3. An organization of the bureau so established upon thoroughly scientific lines as will insure no possible bias in favor of either buyer or seller or producer or manufacturer.
4. The passage of a law that will be more specific in its scope, and under which government employees can be prosecuted for giving away or selling valuable information, as has been done in the Statistical Bureau.

While most of the points thus made by the Cotton Growers' Association are of a character to which no one would take the slightest exception, it is evident that the central feature—the creation of a cotton bureau—is one which is entirely out of harmony with the general proposition already laid down. There are several reasons why the government ought under no circumstances to allow itself to be brought into special relations with a

particular industrial interest. No good reason appears for the creation of a special bureau to deal with cotton in preference to one specially charged with the oversight of any other important, or at all events any speculative, crop. The government has always found such special mechanisms undesirable. The creation of the Department of Commerce and Labor has been quite generally regretted, and the same is true in other cases. Moreover, such a proposition has no real relation to the actual problem. What is wanted is not a new bureau, but a better one. The question is not that of particular attention to some specific industry, nor will it suffice merely to put in charge of the work a man "whose reputation and antecedents shall be beyond reproach," or even one possessing "familiarity with cotton cultivation." The real problem may be stated under three distinct heads as:

1. How best to collect the data upon which judgment is to be based.
2. How most accurately to compile these data.
3. How to publish the results in such a way as to produce least influence upon market prices.

Behind these, of course, is the general question whether such statistics are wanted at all. There is a very substantial body of opinion which holds that they are not, and there are reasons for believing that, in many ways, the entire abolition of the whole service would be desirable. Some attention may first be paid to this aspect of the matter, and then the question of improving the statistics themselves, if they be retained, along the lines already mentioned, may be considered.

The argument for abolishing such crop reports rests upon the fundamental assumption that the government service cannot afford to concern itself with anything but facts. If the crop reports are of any value, it is in changing prices on the market, or in keeping such prices from altering, as they would were no such reports issued. When the government takes any action calculated to affect prices, it necessarily prevents some section of the community from earning a profit that would otherwise have been earned, and aids some other section to secure or retain wealth that would otherwise probably have gone to others. It may be that the change in the distribution of property produced

leads to a more equitable condition of affairs than would have otherwise existed. On the other hand, this might not be the case. It will depend upon the accuracy of the statistics whether greater or less equity is realized. The issue here is evidently between those who believe that governments should not interfere in the distribution of wealth, and those who believe that they should. This is a broad question, which it would be inappropriate to argue at this point. Certain it is that those who do not believe in government interference in industry cannot justify the retention of the crop-report service. On the other hand, it will be admitted that, should the government intervene to do what it can in altering prices along equitable lines, and so secure a fairer distribution of wealth, the only question concerning the retention of the crop-report service would be whether the service could be made accurate and efficient in attaining the ends it was designed to serve.

It is maintained that, were no such report to be issued, the work of preparing crop estimates would fall into unworthy hands. It is said that it would be taken over by brokers and others whose superior knowledge would enable them to pay handsomely for information which might be very valuable, while the producing masses of the country would have no such resource to fall back upon, and would be at the mercy of dealers. Prices, it is argued, would be manipulated in such a way as to be unfavorable to the producer. There would seem to be relatively little support for this view; but, without arguing the general question as to the theory upon which the government crop report rests, we may turn to a brief review of the methods by which it may be rendered more effective.

As already seen, the problem naturally falls into the three parts referred to above. There are now two chief methods that are pursued by those who have to do with crop-reporting systems in this country. One is the method of securing enlightened and well-informed individual judgment. A man who has steadily devoted himself to the study of agricultural statistics or the statistics of some special crop, establishes a system by which he keeps in touch with many well-informed men of all classes in the producing sections. Without having any elaborate list of corre-

spondents or any complicated scheme of tabulation, the crop estimator of the kind referred to makes up his mind, by the use of indications known to him, and finally publishes an estimate as to the condition of a given crop. This method is, as has been said, very widely employed at the present day, and in many instances works well, giving good results and anticipating the future with a reasonable degree of accuracy. But in this case all evidently depends upon the estimator. If he is not above suspicion, his estimates will not be so. If he has been misled the effect will be reflected in his work. In short, this method is out of the question for government service, because the crop statistician would invariably be open to suspicion, however undeserved it might be.

The other method of collecting crop statistics is substantially that adopted by the Department of Agriculture at the present time. It is that of obtaining returns from a great number of correspondents, whose answers are then tabulated and the results published as the average judgment of a large corps of correspondents. The defects of the system are found in the belief that the average judgment of many men is necessarily correct—which is far from being the case—and in the possibility that the corps of correspondents may be allowed to become biased, through the selection of too many men belonging to interested classes. It may be also that improper or inadequate methods of weighting or averaging will be adopted, whereby insufficient account will be taken of important factors in the situation. What has been said covers the first two elements of the problem as analyzed above. There is perhaps little to be said by way of complaint of the corps of correspondents on the lists of the Department of Agriculture. Some might think that this corps consists rather too largely of farmers and producers, or is defective, as in the case of the cotton-ginnery list. Again, it might be thought that the methods of computation employed are unsatisfactory. This is in part true. Inspection of the actual process of tabulation has led the writer to believe that there is perhaps no serious complaint to be made of the methods of tabulation and computation until the latest of the operations are reached. But, in these latest operations there seems to be too great tendency to drift away

from the actual arithmetical facts in the case, and to exercise the "judgment" of which ex-Statistician Hyde has on various occasions made mention. In other words, there would seem to have been, at least until lately, too great a tendency to use the elaborate force of the Department of Agriculture simply as a blind, giving the real weight in making the crop estimates to the reports of special agents and state agents, and giving no fixed or definite weight to the returns of county correspondents. Just at this point enters the element of danger of which we have spoken when referring to the method of crop-reporting in which reliance is entirely placed upon individual judgment. The main trouble with the present system, in short, appears to be that it has been allowed to approximate to a system exactly its theoretical opposite, its elaborate tabulation and correspondence features being altogether too largely a merely formal procedure.

It should be evident, from what has been said, that the first element in restoring confidence in the government's cotton and other statistics should be the establishment of a definite, invariable, statistical process in which a certain specified weight is given to each and every source of crop information, and in which no "judgment" whatever is used in discrediting any of these sources, so long as they remain upon the books of the Department of Agriculture as among the corps of correspondents.

The third feature of the problem remains. Granting that the data upon to which to base reports has been collected and compiled with unflinching care and absolute accuracy, granting that the final figures are as close to the truth as human insight can make them, it would still remain true that the government should aim to make known the results of its work in such a way as to be least disturbing to existing conditions. That there should be, at all events, no unnecessary fluctuations in price, and that transitions from one price level to another should be as easy and natural as possible, should evidently be the object aimed at. Under present conditions, this is hardly the case. The publication of the bare returns each month does not afford a sufficient amount of information to the public. It should know the nature of the data that are coming in. Should these data be given out from time to time, the reports being perhaps arranged in classes in such a way as to

bring them out at intervals; or if, when the final report is made known, the returns from the different classes of correspondents should also be made known, the possibilities are that prices would be very much less disturbed than they are under a régime where the government comes out with a flat announcement of percentage results on a specified day each month. The lines of improvement, therefore, are two in number. The first is the adoption of definite, known, unchangeable, and rigid methods of computation. The second is a system of publicity which will make known, as rapidly as practicable, as much of the data upon which the report service is based as the conditions of the work will possibly permit. There can be little doubt that the realization of both of these objects is necessary to the attainment of any substantial improvement in the public estimation of our system of crop-reporting.³

H. PARKER WILLIS.

WASHINGTON.

³One other feature of the present situation should certainly be changed. Something should be done to obviate the absurdities of an organization whereby the Weather Bureau may, as during the month of June, 1905, report constantly favorable conditions for the cotton crop, while at the end of the month the Bureau of Statistics may, as it did, report a distinct retrograde movement in condition. The natural way to secure harmony would be to amalgamate the two services under one head, but, if that be not possible, some system of consultation and mutual co-operation should be arrived at whereby discrepancies in the drift of the reports will be avoided.

It seems clear also that something should be done to improve the reports on acreage. About the only rational step that could be taken would be to intrust the preparation of the acreage figures to the census, instructing the latter bureau, through its ginning agents, to make an actual canvass of acreage, after planting has been completed each year. This will then take the place of the unreliable acreage figures which the department has now for a number of years published. It would leave in the hands of the department nothing except the condition reports and the advance estimate of annual production. The wisdom of retaining these may be questioned on the general grounds that have already been set forth. There can, however, be no doubt that the control of the other figures in the present system should be altered as indicated, and that the Bureau of Statistics is not competent to handle acreage figures in the most satisfactory way. No other office is in condition to take charge of condition figures or preliminary production estimates, so that, if these are actually to be maintained, the Bureau of Statistics is doubtless the organization which, accepting present theories, should control them.